THERMORRESPONSIVE MAGNETIC NANOPARTICLES AS TARGET DRUG DELIVERY FOR CANCER TREATMENT

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ABSTRACT

In this research, temperature sensitive microgels with magnetic core for controlled release of 5-fluoruracil was synthesized. Magnetic nanoparticles (Fe_3O_4) were prepared by coprecipitation method and the surface was functionalized by acrylic acid. Polymer poly(N-isopropylacrylamide) (PNIPAM) were grown by free radical polymerization in presence of cross-liker and initiator. The size of the polymer was manipulated by changing the mole percent of the crosslinker and evaluated for their morphology (TEM), particle size, zeta potential, loading efficiency, drug content and drug release. Furthermore, microgels were tagged with FITC, a fluorochrome which could be applied for cell imaging. Cytotoxicity studies revealed that the microgels were not toxic. These complex nanoparticles (Fe_3O_4/pNIPAM/FITC/5-Fu) appear to be a great promise to be used in controlled drug delivery and tumor targeting.

Keywords: *temperature responsive microgel, F_eO_4, 5-fluouracil, tumor targeting, hyperthermia*